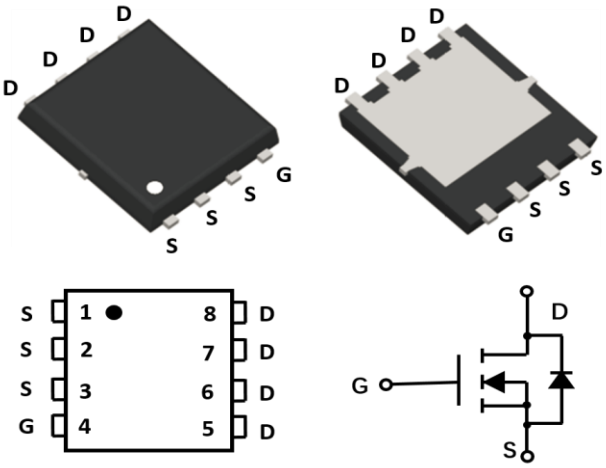
RoHS COMPLIANT

N-Channel Enhancement Mode Field Effect Transistor

DFN5X6



Product Summary

- V_{DS} 150V
- I_D 15A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜75 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜88 mohm

General Description

- Split Gate Trench MOSFET technology
- High Speed Power Switching, logic level
- Enhanced Body diode dv/dt capability
- Enhanced Avalanche Ruggedness
- 100% UIS Tested, 100% Rg Tested

Applications

- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit
- Power Tools
- UPS
- Motor Control

■ Absolute Maximum Ratings (T_A=25℃ unless otherwise noted)

Parameter		Symbol	Maximum	Unit
Drain-source Voltage		V_{DS}	150	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_A=25℃	I_D	15	A
	T_A=100℃		9.4	
Pulsed Drain Current [A]		I_{DM}	50	A
Avalanche Energy, Single Pulse [B]		E_{AS}	3.75	mJ
Total Power Dissipation @ T_C=25℃		P_D	29	W
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	4.3	℃/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJG15N15B	F1	YJG15N15B	5000	10000	100000	13“ reel

■ Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions		Min	Typ	Max	Units
Static Parameter							
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA		150			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=150V,V_{GS}=0V	T_J=25℃			1	μA
			T_J=100℃			100	
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V				±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA		1.0	2.0	3.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=5.0A			63	75	mΩ
		V_{GS}=4.5V, I_D=4.0A			70	88	
Trans conductance	g_{fs}	V_{DS} =5V, I_D =15A			18		S
Gate Resistance	R_G	V_{GS} =0V, V_{DS} Open, f=1MHz			5.0		Ω
Diode Forward Voltage	V_{SD}	I_S=15.0A,V_{GS}=0V			0.9	1.2	V
Maximum Body-Diode Continuous Current	I_S					15.0	A
Dynamic Parameters							
Input Capacitance	C_{iss}	V_{DS}=75V,V_{GS}=0V,f=1MHZ			625		pF
Output Capacitance	C_{oss}				37		
Reverse Transfer Capacitance	C_{rss}				13		
Switching Parameters							
Total Gate Charge (10V)	Q_g (10V)	V_{GS}=10V,V_{DD}=75V,I_D=5A			11.6		nC
Total Gate Charge (4.5V)	Q_g (4.5V)				6.5		
Gate Source Charge	Q_{gs}				1.2		
Gate Drain Charge	Q_{gd}				4		
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V,V_{DD}=75V, I_D=5A, R_{GEN}=10Ω			10		ns
Turn-on Rise Time	t_r				7		
Turn-off Delay Time	$t_{d(off)}$				14		
Turn-off Fall Time	t_f				3		
Reverse Recovery Time	t_{rr}	V_R =75V, I_F =5A, dI_F/dt=100A/μs			50		ns
Reverse Recovery Charge	Q_{rr}				70		nC

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.
B. L=0.3mH, T_A =25℃.

■ Typical Performance Characteristics

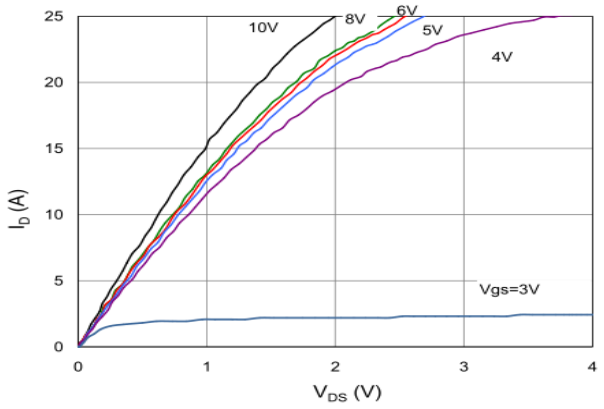


Figure1. Output Characteristics

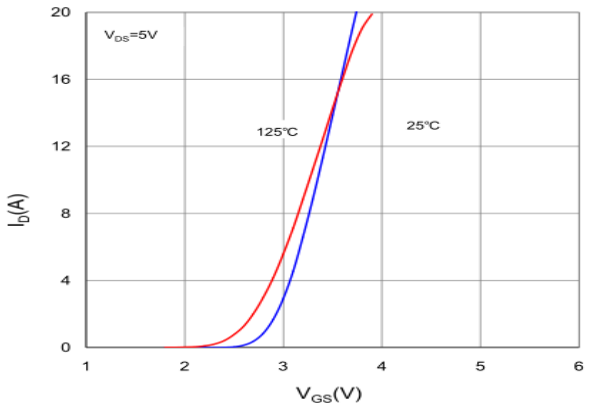


Figure2. Transfer Characteristics

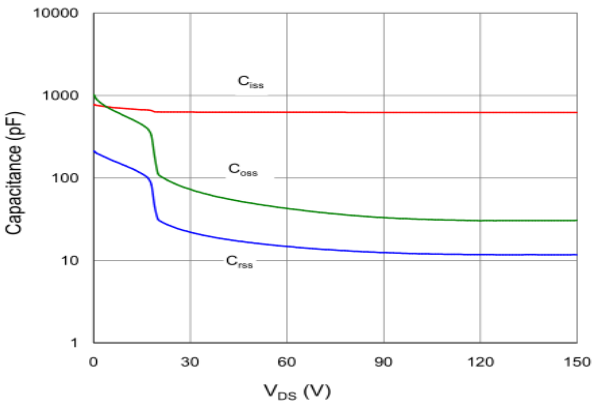


Figure3. Capacitance Characteristics

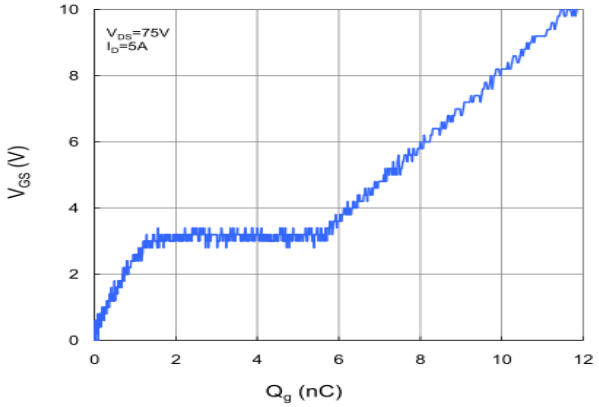


Figure4. Gate Charge

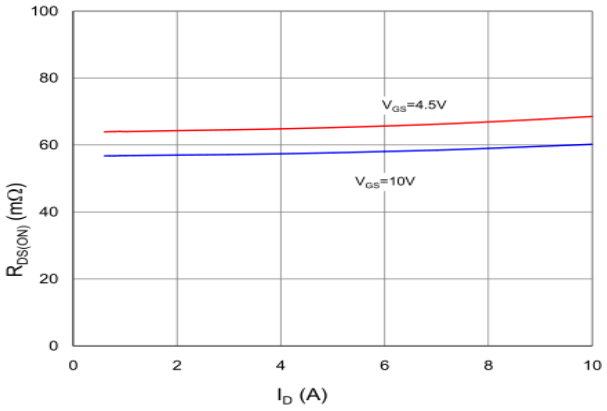


Figure5. Drain-Source on Resistance

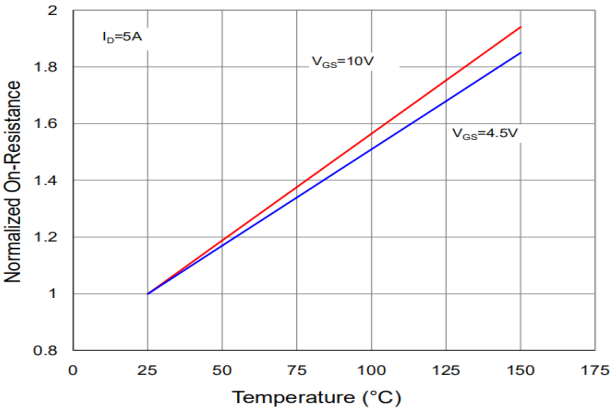


Figure6. Normalized On-Resistance vs. Junction Temperature

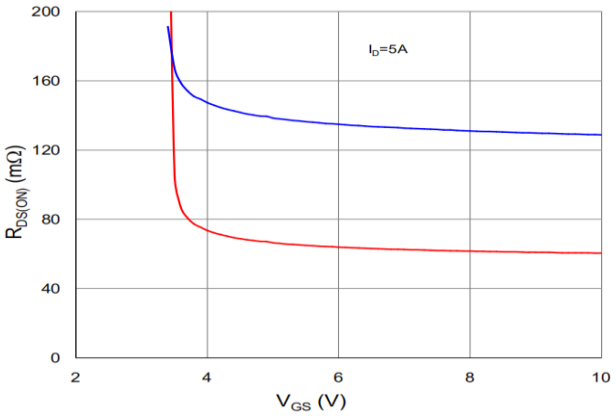


Figure7. On-Resistance vs. Gate-Source Voltage

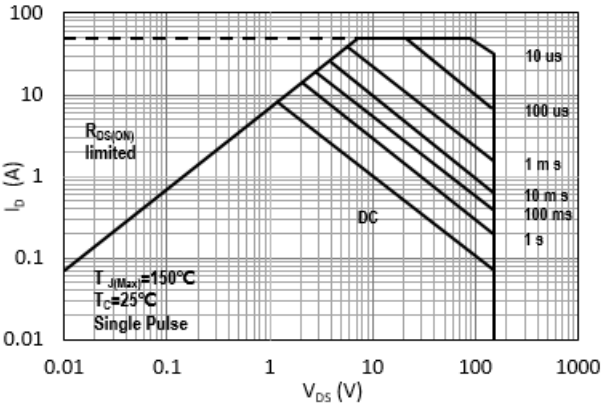


Figure8. Safe Operation Area

Figure A: Gate Charge Test Circuit & Waveforms

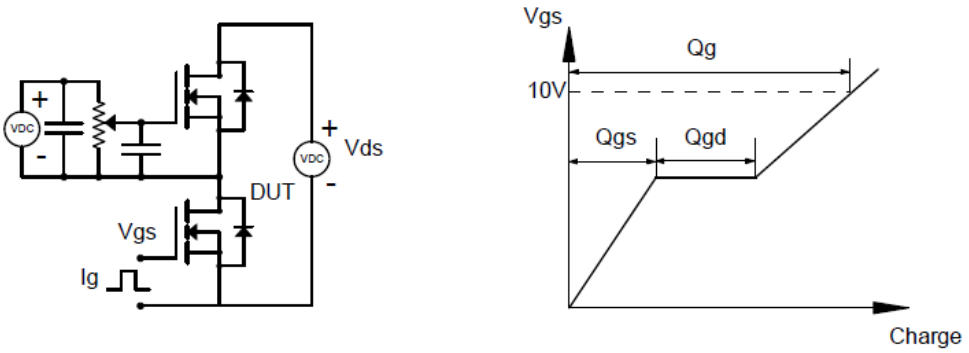


Figure B: Resistive Switching Test Circuit & Waveforms

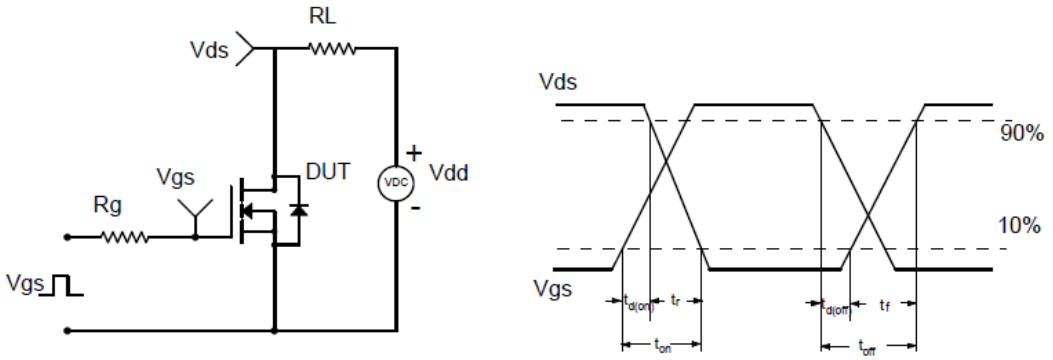


Figure C: Unclamped Inductive Switching (UIS) Test

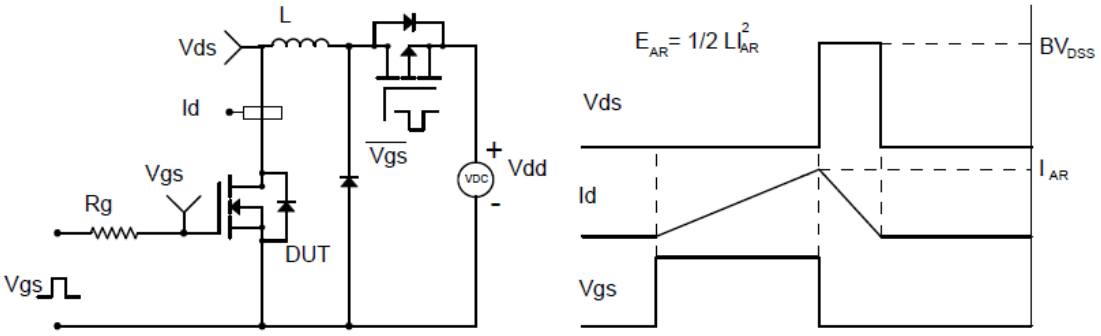
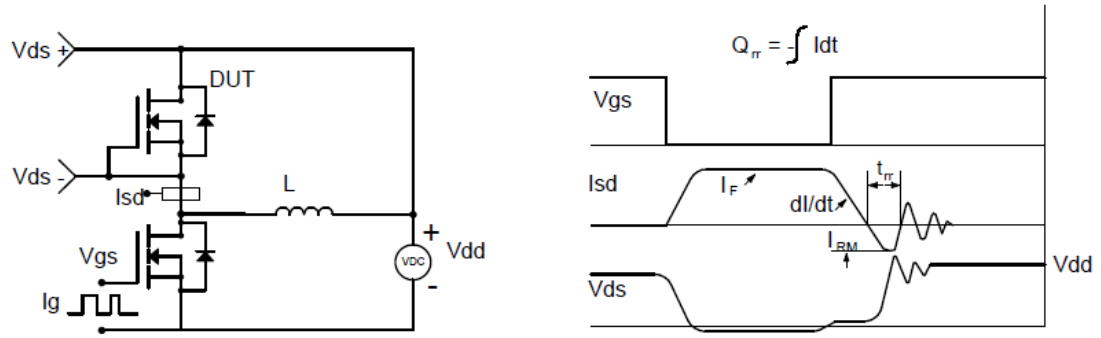
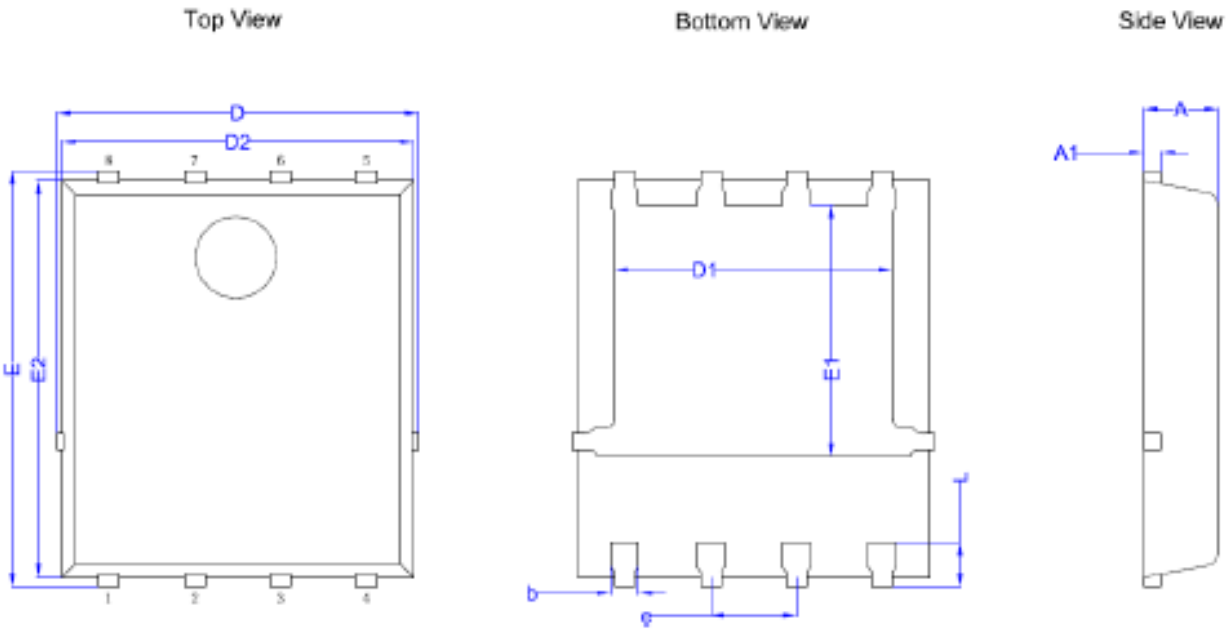


Figure D: Diode Recovery Test Circuit & Waveforms



■ DFN5X6 Package information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	1.00	1.10	1.20
A1		0.254 BSC	
D	5.15	5.35	5.55
E	5.95	6.15	6.35
D1	3.92	4.12	4.32
E1	3.52	3.72	3.92
D2	5.00	5.20	5.40
E2	5.66	5.86	6.06
e		1.27BSC	
b	0.31	0.41	0.51
L	0.56	0.66	0.76

Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of with would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website http:// www.21yangjie.com , or consult your nearest Yangjie's sales office for further assistance.